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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,261	03/09/2005	Yong-Ki Park	930086-2008	2904
7590 Ronald R Santucci Frommer Lawrence & Haug 745 Fifth Avenue New York, NY 10151			EXAMINER HAILEY, PATRICIA L	
			ART UNIT 1793	PAPER NUMBER
			MAIL DATE 12/27/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/527,261

Applicant(s)

PARK ET AL.

Examiner

Patricia L. Hailey

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-9, 16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-9, 16 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 7, 2007, has been entered.

Applicants' submission includes an amendment, in which claims 1, 2, 15, 18, and 19 were canceled. No new claims have been added; claims 4-9, 16, and 17 remain pending in this application.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Document was filed on March 9, 2005.

Claim Objections

3. ***Claim 17 is objected to because of the following informalities:***

Claim 17, as presently amended, now has two complete sentences. It appears that the first sentence, which is the claim as it was originally filed, was intended to have been deleted (i.e., lined out).

Appropriate correction is required.

Double Patenting

4. Applicant is advised that should claim 16 be found allowable, claim 17 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

In their present form, claims 16 and 17 are verbally identical, and both claims also depend from claim 5.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. ***Claims 4-9, 16, and 17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.***

The subject matter recited in the claims, but not clearly described in the Specification, is the limitation in claim 5 reciting "wherein no additional metallic components are present in said aluminum oxide catalyst."

Page 4, lines 17-20 of the Specification, upon which Applicants rely for support to the amendment to claim 5, states:

"However, it is preferred to use phosphate compounds, *which do not contain metal components*, such as diammonium hydrophosphate..." (emphasis added).

This excerpt from the Specification implies that the compounds providing the phosphorus component in the "aluminum oxide catalyst" recited in the instant claims desirably do not contain metal components—not the aluminum oxide catalyst itself.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 4-9, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rossin (U. S. Patent No. 6,509,511) in view of Sato et al. (U. S. Patent No. 4,791,084).

Rossin teaches a process for the decomposition of perfluoroalkanes via contact thereof with a catalyst comprising alumina. The catalyst preferably comprises a stabilizing agent (if present, in amounts ranging from 1 to 100 parts by weight per 100 parts alumina, see col. 6, lines 40-43 of Rossin), examples of which include phosphorus. See the Abstract of Rossin, as well as col. 3, lines 45-56 and col. 6, lines 14-39, the latter disclosing pseudoboehmite and aluminum hydroxide as exemplary sources of alumina (considered to read upon the "aluminum oxide catalyst" of **claim 5**).

The process takes place in the presence of water (col. 4, lines 30-46 of Rossin) and at elevated temperatures ranging from at least 400°C, and, especially preferred, temperatures of at least 600°C. See col. 4, line 66 to col. 5, line 6 of Rossin, as well as the Examples, which additionally disclose exemplary gas streams comprising the perfluoroalkanes, and, more specifically, water (considered to read upon the limitation "water vapor"), in amounts considered within the limitations recited in **claims 6 and 9**.

Additionally, the gas stream may comprise, in addition to perfluoroalkanes and water, an oxidizing agent, such as oxygen. See col. 3, lines 61-63 of Rossin. While no

desirable numerical amount of oxygen is disclosed by Rossin, one of ordinary skill in the art would readily deduce that even a trace amount of oxygen would fall within Applicants' claimed "concentration of 0-50%"; thus **claims 7 and 9** regarding the addition of oxygen is considered read upon by Rossin.

Exemplary perfluoroalkanes suitable for decomposition include trifluoromethane (CHF_3) and hexafluoroethane (C_3F_6). See col. 5, lines 44-52 of Rossin, as well as Examples II and IV, which disclose C_2F_6 and CF_4 as additional perfluoroalkanes (**claims 4 and 8**).

Although Rossin discloses a catalyst comprising alumina, and a stabilizing agent that can be phosphorus, this reference does not specifically disclose the molar ratio recited in claim 5; Rossin also does not disclose sources of the phosphorus component, which is also recited in claim 5.

Sato et al. disclose a catalyst comprising alumina particles on which a phosphorus component has been fixed. See col. 3, lines 35-38 of Sato et al. (considered to read upon the limitation "wherein a surface of said aluminum oxide is loaded with phosphorous" in **claim 5**).

The catalyst is prepared by contacting a previously prepared alumina or alumina hydrate with a phosphoric ion-containing aqueous solution, drying and thereafter calcining the alumina. Exemplary phosphoric ion-containing aqueous solutions include aqueous solutions of phosphoric acid, ammonium hydrogen phosphate $[(\text{NH}_4)_2\text{HPO}_4]$, and ammonium phosphate. See col. 3, lines 56-61 of Sato et al. (considered to read upon the "phosphorus (P) component" in **claim 5**), as well as col. 4, lines 21-26.

The amount of phosphorus introduced in the alumina is preferably in a range corresponding to a P/Al atomic ratio of 0.01 to 0.20 (Al/P of 100 to 5).

Example 1 of Sato et al. depicts an exemplary embodiment in which an aluminum hydroxide is calcined, and orthophosphoric acid is subsequently added thereto to obtain phosphorus-containing alumina particles having a P/Al atomic ratio of 0.07 (Al/P 14.28). See col. 5, lines 41-55 of Sato et al.

Note that alumina and aluminum hydroxide are also disclosed in Rossin as exemplary alumina sources (col. 6, lines 14-25).

The phosphorus-containing alumina disclosed in Sato et al. is considered comparable to the catalyst disclosed in Rossin.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Rossin, which teaches a phosphorus-stabilized alumina catalyst, with the teachings of Sato et al., and thereby obtain Applicants' claimed invention. The catalyst of Sato et al. is considered to be within the purview of the catalyst disclosed by Rossin as an alumina stabilized with, for example, phosphorus.

Response to Arguments

Applicants' arguments regarding the 102(b) rejection of claims 1, 2, 10-15, and 19 as being anticipated by Sato et al. have been considered, but are deemed moot in view of Applicants' cancellation of these claims.

With respect to the 103(a) rejection of claims 4-9, 16, and 17 (as claim 18 has been canceled), it is the Examiner's position that the above-stated rejection continues to read upon Applicants' claims, for the reasons stated above.

Although Rossin discloses that "the alumina is prepared from aluminum nitrate", the reference also teaches that additional sources such as alumina itself, pseudoboehmite, and aluminum hydroxide may also be employed as alumina sources. See col. 6, lines 14-25 of Rossin.

Further, although Rossin teaches the presence of stabilizing agents, these agents are *preferred*, not required. See, for example, col. 3, lines 53-57. However, the teaching of Rossin of phosphorus as an exemplary stabilizer is considered to read upon Applicants' claims.

Sato et al. is relied upon for its teachings regarding exemplary phosphorus sources, such as those recited in Applicants' claims, in a catalyst comprising alumina particles to which phosphorus has been fixed (which is considered equivalent to the catalyst of Rossin—alumina stabilized with phosphorus).

For these reasons, Applicants' arguments are not persuasive, and the rejection of record is maintained.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-

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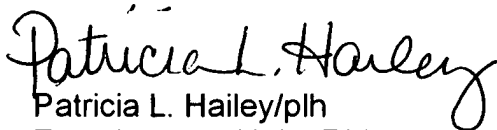
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1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Patricia L. Hailey/plh
Examiner, Art Unit 1793
December 26, 2007